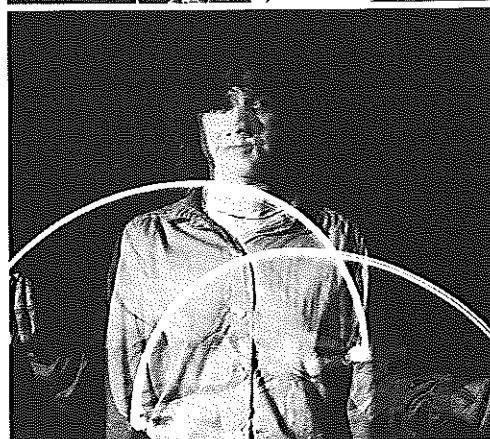
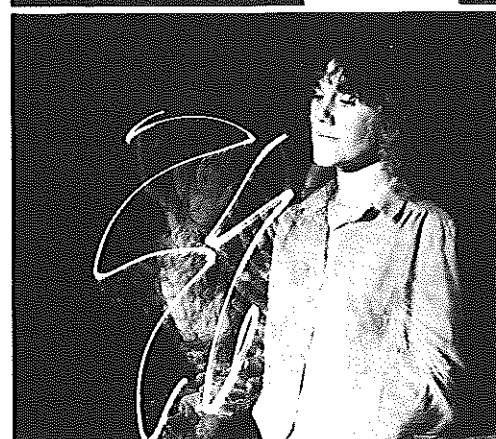
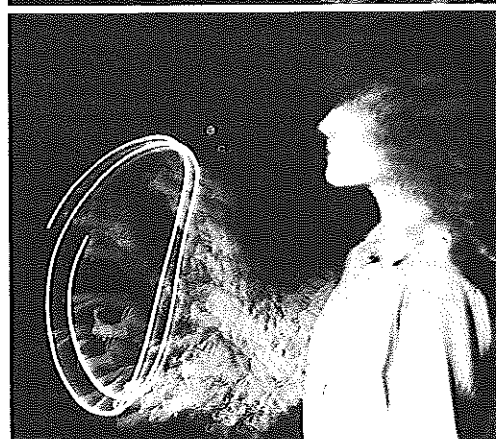
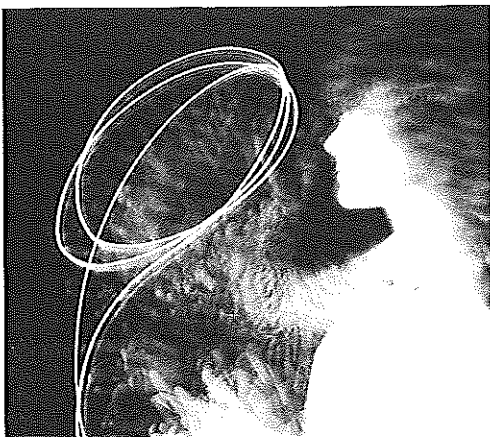
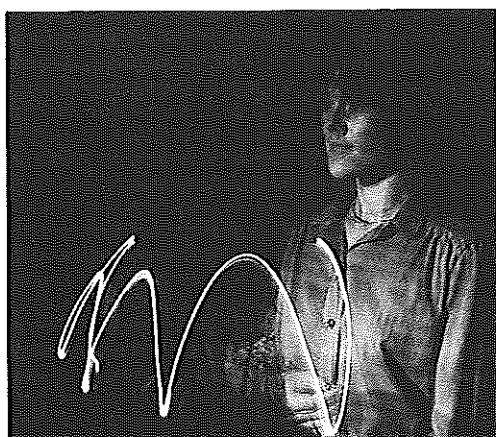


III. Grammatical Processes



IN THE study of a communication system that seems as markedly iconic as ASL does, we felt that a reasonable first area of attack was the internal structure of the basic, citation-form signs—their basic naked forms. Parts I and II offered evidence for the internal structure of signs and for constraints on that formation system, although the nature of the system is not yet fully understood nor described in any linguistic detail.

In chapter 8 we observed that in sentence contexts the sign units we had designated as citation signs underwent meaningful modifications of form—not by affixal additions to the sign but by changes in movement and by spatial displacements. These modifications prove to be a key to one of the salient structural characteristics of the language: its richness in morphological processes, which result in single complex sign units—complex in form as well as in meaning.

Chapter 9 describes our initial foray into grammatical structure in ASL. We began by considering the relations between certain two-sign expressions that appeared to be functioning semantically as single units: Are they simply loose composites, or are they structured in some special way? More specifically, might they be compounds? The existence of a regular process for forming compound signs from existing lexical items would have important consequences. It would mean that the lexicon of ASL is highly expandable, in contrast to the view held by earlier analysts who regarded ASL as extremely constrained in this respect. Moreover, it would provide a promising area in which to investigate whether signs—with all their iconicity—are inextricably bound to certain specific meanings. Chapter 9 identifies a productive process in ASL for forming lexicalized compounds and analyzes the special ways the language differentiates compounds from phrases. It also shows the idiomatic meaning of many compounds.

Further studies of multisign units in ASL showed that the language not only provides ways of forming new lexical items but includes rules for inventing or deriving whole sets of terms. Chapter 10 describes productive syntactic processes of compounding, by which terms for specific conceptual categories can be formed. Some of these processes are analogous to compounding in spoken languages, but others are very special to a language of moving hands and bring into play the potentials of mimetic depiction.

In chapters 11 and 12 we turn our attention to the meaningful modifications of sign form in ASL—changes in the temporal-spatial contours of signs which modulate their meaning. We investigate the dimensions of movement that figure in these meaningful modifications, the extent to which such modifications constitute coherent systems of form and meaning, and the extent to which the modifications are part

of the sentence grammar of ASL. Our conclusion is that these modifications represent a rich system of morphological processes, making structured use of the dimensions of the spatial mode and compacting a great deal of information into a single sign unit. Chapter 11 describes our discovery of such morphological processes in ASL and the very special form they take. Our focus was on the basic issue of whether the modulations of signs we observed were optional expressive changes or were in fact a part of the sentence grammar of the language. Considerable evidence persuaded us of their grammatical status. But the form taken by the operations raised a new and complex issue in our study of ASL. The formational dimensions employed in these processes appeared quite different from those that had been identified for signs at the lexical level. It appeared, and chapter 11 postulates, that there are two distinct layers of structure in the language, with morphological operations superimposing a whole set of new dimensions on lexical forms.

The discovery of one set of inflectional processes was a key to the identification of many others. Chapter 12 presents a sample of the remarkable variety of such processes in ASL. This study led to the identification of consistently recurring, systematically organized dimensions of patterning in morphological operations in the language.

The morphological processes in ASL mark semantic distinctions that include distributional aspect, temporal aspect, degree, and reciprocity. These distinctions within such grammatical categories are familiar ones marked in many spoken languages. But ASL differs dramatically from English and other spoken languages particularly in the spatial mechanisms used and the way the mechanisms are combined, allowing, ultimately, the form of one modulation to be embedded in the movement shape of another. For the form of its morphological processes, the mode in which the language has developed makes a crucial difference. ASL signs are made by the hands—the visible hands—moving in space; it is dimensions of space and movement that the language uses for its grammatical processes.

The studies presented in this section show that the visual-manual communication system of the deaf has been shaped into an independent language with its own inner form, and thus that the human capacity for building complex linguistic systems is independent of the mode in which the language has arisen.

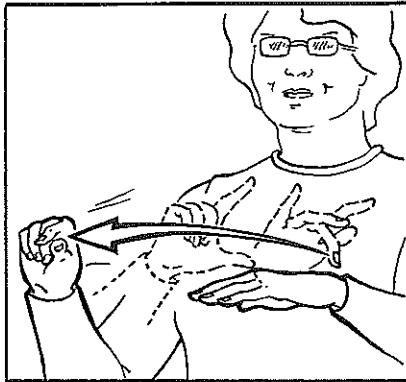
On the Creation of New Lexical Items by Compounding

9 In the early 1970s, the word *streaker* became popular. (It even got into the 1976 edition of the *Concise Oxford Dictionary*, quaintly defined as a person who runs through a public place while “indecently unclothed.”) We were curious about how this new concept, which figured prominently in the news, would be expressed by signers whose primary language is ASL. At various times we saw different expressions for the concept, all invented by stringing together already existing signs and several starting with the ASL sign NUDE. In one expression NUDE was followed by a sign that means ‘to run away in a hurry.’ In another, shown in figure 9.1, NUDE was followed by a sign that means ‘to zoom off.’ When made by fluent signers this latter pair of signs took on a certain economy of form: one sign seemed to flow into the other with ease. This obvious conflation of the signs NUDE and ZOOM-OFF spread with surprising rapidity through various deaf communities from California to Washington, D.C.

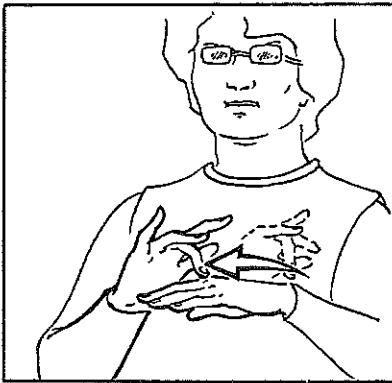
By what processes are new concepts designated in a visual-manual language such as ASL?

(1) Many new expressions are invented by coining new signs based on marked iconic associations. These inventions may be freely mimetic, may be based in part on existing ASL signs, and/or may be new combinations of ASL parameters. With use, the more freely mimetic inventions typically begin to conform to conventions of ASL signs. One example is the recently coined sign COMPUTER, which mimics the turning motion of computer reels but with a HC, PA, and MOV that are conventional in the language; an iconically based invention, it is at the same time constrained by the conventions of ASL (see figure 9.2). Other newly coined, mimetically based expressions are signs for ‘Polaroid camera,’ ‘laser beam,’ ‘strobe light,’ and ‘Viking lander.’ Such iconically based inventions for designating objects can undoubtedly occur more readily in sign language than in spoken language.

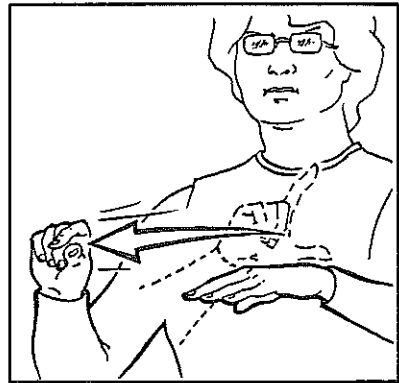
Figure 9.1 A recently coined two-sign composite for 'streaker.'



Composite sign for 'streaker'



NUDE



ZOOM-OFF

(2) Some new sign creations represent a special kind of borrowing from English. In what are called initialized signs, the handshape representing the first letter of an English word is used in place of the HC normally used with a sign. The new sign takes its other characteristics from an existing ASL sign that is semantically related to the new concept. For instance, since there was no sign for the specific types of grammatical changes we were referring to as modulations on signs, our deaf researchers invented one, substituting the HC representing the letter "M" in fingerspelling for the HC of the existing ASL sign CHANGE. This creates a new sign MODULATION_{inv} (figure 9.3), an initialized derivative of the original ASL sign CHANGE.¹

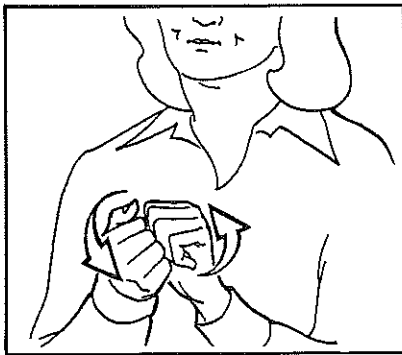
(3) Existing signs may themselves take on new meanings by way of figurative extension (the *nose* of an airplane is an English example). However, in ASL such extension occurs in a special way, resulting in

Figure 9.2 An iconically based recent coinage.

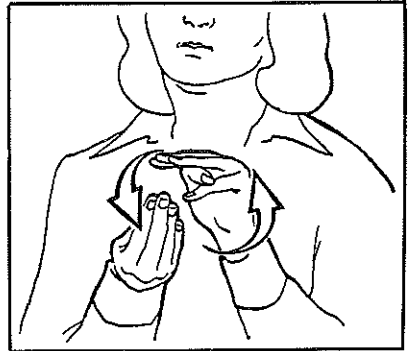


COMPUTER

Figure 9.3 Enriching the lexicon by borrowing from English. (Note change in handshape.)



CHANGE

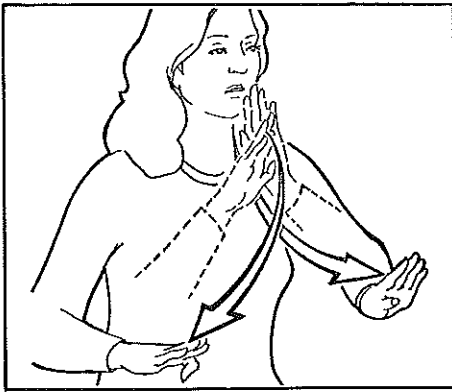


MODULATION_{inv}

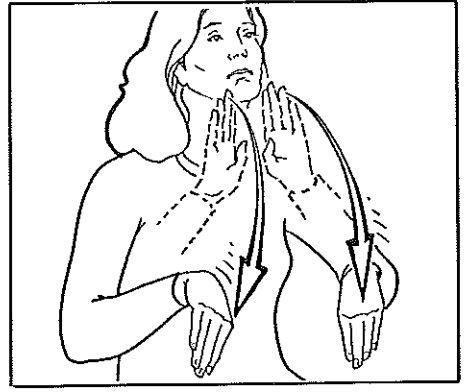
remarkably few true homonyms; invariably a shift in meaning is accompanied by some specific change in the sign, primarily in its movement. For example, an idiomatic derivative of the sign QUIET means 'to acquiesce' or 'to give in,' as in an argument (see figure 9.4). The sign glossed as HUNGRY has in citation form a single downward movement on the torso. A derivative of HUNGRY made with a slight change in movement—a soft, repeated, downward motion—has the same meaning as the English slang expression *horny*. These derivatives carry a different, less literal, meaning; they also exhibit a change in form, typical of the process by which signs take on shifts of meaning in ASL. (It is not yet clear whether there is any overall regularity in these movement changes or in the meaning shifts; for now, we will assume that they are idiosyncratic to particular signs.)

(4) New signs can be created on the basis of regular derivational pat-

Figure 9.4 Enriching the lexicon through an idiomatic derivative. (Note change in movement.)

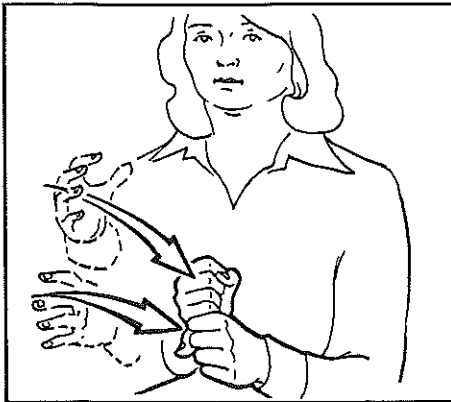


QUIET

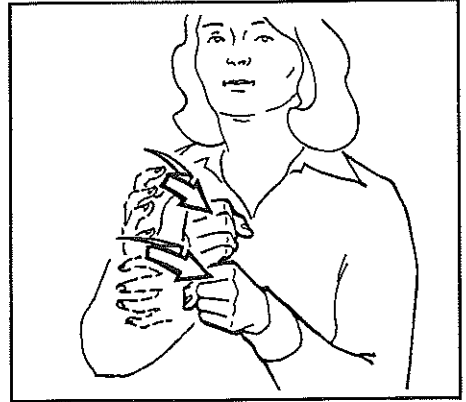


Derivative meaning 'to acquiesce'

Figure 9.5 Enriching the lexicon through a productive derivational process. (Note change in movement.)



GET



Derived nominal meaning 'acquisition'

tering. Supalla and Newport (in press) have noted a systematic difference in form between a large set of action verbs and their related concrete nouns, *SIT* and *CHAIR*, for example. The verbs vary in movement, but the semantically related nouns consistently have a smaller movement that is restrained and repeated. We have found that new nouns can be formed from existing verbs on the basis of this patterning, though the meaning of the derived form need not always be transparent: for instance, the verb *GET* made with smaller repeated movement means 'acquisition' (figure 9.5).

In our research group, linguistic discussions requiring new signs

occur daily. The verb JOIN has been made with small repeated movement as a derived sign for 'compound.' A verb sign meaning 'to quote from' ('to take or draw ideas, thoughts or words from') has been converted into a noun with small repeated movement as the sign for a grammatical 'derivative'—for one sign that has been derived from another. These means of enriching the lexicon through derivational processes are discussed in chapter 12 and in Bellugi and Newkirk (in press).

But none of these ways of enriching the language—inventing new signs or modifying existing ones—was the process used to invent a way of referring to 'streaker.' That new concept was expressed by stringing together two existing simplex signs. Such concatenation of two or more lexical items is the simplest and most common means of building up meaning in languages—as a phrase, a clause, an idiomatic expression, or as a compound.

In ASL, we have found many freely invented two-sign units used for expressing previously undesignated concepts: NUDE ZOOM-OFF ('streaker'), HOT SWIRL[+] ('Jacuzzi'), POISON KILL ('D.D.T.'). HEREDITY CHANGE[+] ('genetic engineering'), and ARTIFICIAL HEART ('heart transplant') are just a few that we have observed. But are these groupings two signs strung together without internal structure? NUDE ZOOM-OFF might be a loose designation as in *he was nude, he ran away*. Are they two signs bound in a syntactically hierarchical structure, such as the phrase *a nude runner*? Or are they compound signs, bound together as single lexical units?

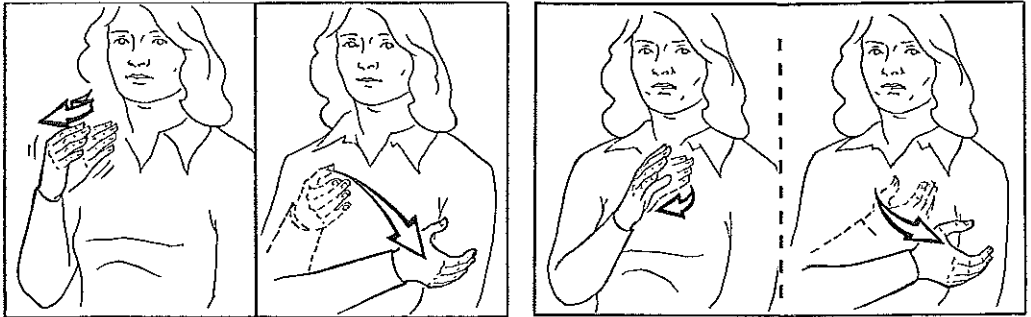
The Question of Compounds

A compound word, according to Webster's Universal Dictionary, is a word "composed of two or more words"; thus compounding is a device for productively creating new words from two or more root words. Phrases are linguistic units whose meaning is composed in regular and predictable ways from the constituent elements and their relations in the phrase. Lexical compounds, on the other hand, are often not so directly predictable; the relation between the component parts and the meaning of the whole is more arbitrary.

In English, compounding is a widespread process for forming new words from two already existing ones; the language not only provides the mechanism, it also provides clues to differentiate compound words from compositional phrases. *A wet suit* meaning a suit that is wet is a compositional phrase; *a wét suit* meaning a garment worn by skin divers is a compound. In the phrase, the word *suit* is stressed; in the compound, the stress is on *wet*.

It seems that not all languages provide means for creating new lexical units by combining two or more existing words into compound

Figure 9.6 Comparison of two signs as an adjective-noun phrase (a) and as a composite unit (b).



(a) BLUE SPOT meaning 'a blue spot'

(b) BLUE SPOT meaning 'a bruise'

words (Sapir 1921). Moreover, not all languages that have compound words provide a ready means for their identification in the sound stream. Indonesian, for example, has compound words but apparently lacks consistent clues to distinguish between constructions and compounds (Dyan 1967). Thus it is relevant to ask the following questions: does ASL provide a mechanism—a grammatical process—for combining two or more signs and bonding them into a new sign that then functions as a single lexical unit? If so, are there any clues that might distinguish compounds from phrases in the signing stream?

In order to determine whether or not ASL has a mechanism for compounding, we began by identifying well-established composite expressions made of two existing signs. Deaf researchers made a large collection of such candidates for compounds, noting them in their daily conversation and searching through videotapes made of native signers and through books of signs (Long 1918; the DASL; Watson 1973).²

As an example, one established two-sign unit in ASL is an expression composed of the sign BLUE and the sign meaning 'spot,' here made on the signer's arm (figure 9.6a). The two signs may be used in an adjective-noun phrase:

(1) TED HAVE BLUE SPOT.

Ted has a blue spot (a spot colored blue).

However, the same two signs are also used together to form a special two-sign unit (figure 9.6b) whose meaning is quite different:

(2) TED HAVE BLUE SPOT.

Ted has a bruise.

What kind of evidence would indicate whether or not such a composite expression is functioning as a compound rather than as a syntactic phrase or idiomatic expression? Such evidence might include: (1) whether or not the two signs are lexical roots in the language; (2) whether or not the two signs in such a composite function syntactically

as single lexical units—for example, a single lexical item cannot be interrupted by other forms; (3) whether or not grammatical operations differ in application or form with respect to single signs and to phrases—a compound sign should function as a single lexical unit does in the language; (4) whether the meaning of the composite differs from the meaning of the same signs in a phrase or clause. Compounds (as well as idiomatic expressions) often have specialized meaning. In English, the compound *lady killers* (men with the reputation of being able to fascinate women) is differentiated from the compositional meaning of the phrase *lady killers* (killers who are female).

At the beginning of our study, we did not know whether or not there was a productive process of compounding in ASL. That some expressions were historically two-sign units had been established (see chapter 3), but whether or not these were compounds (functioning as single lexical items, despite their two-part form) had not been ascertained. Other researchers had failed to find clues by which to identify compounds as distinct from other two-sign units. Not until we worked with deaf researchers who were native ASL signers were we able to make a serious investigation of this question.

Three deaf researchers compiled lists of over a thousand candidates for compounds. Each assembled a card file of two-sign sequences felt to be single units, recording for each a gloss for the separate parts, an English translation of the meaning of the whole, and some sentences in which the composite could be used in ASL.³

Gloss for signs		Meaning in English
Sign 1	Sign 2	
BLUE	SPOT	bruise

Sentences using the two-sign unit in ASL:

(1) CARLENE HAVE BLUE SPOT, PURPLE.

Carlene has a purple bruise.

(2) KEN EASY[+] BLUE SPOT.

Ken gets bruises easily.

(3) INJECTION[+], (ME) ALWAYS[+] BLUE SPOT.

When given an injection, I always get a bruise.

The researchers then recorded their collections of two-sign units on videotape. Each researcher observed the tapes made by the other two, wrote English glosses for the component signs of the composites, and indicated whether or not he himself accepted and used those expressions. The composites for which there was general agreement on the separate component signs and which were accepted and used by all three researchers as established expressions in ASL composed the corpus for analysis. Examples of this collection are listed in table 9.1.

Table 9.1 Examples of ASL compounds.

Compound sign	Lexicalized meaning of compound in ASL
SICK SPREAD	epidemic
FACE NEW	stranger
BED SOFT	pillow or mattress
EAT NOON	lunch
FACE STRONG	to resemble
MONEY EXCHANGE	bank teller or budget
GIRL SERVE	waitress
SLEEP SUNRISE	to oversleep
SLEEP DRESS	nightgown or pajamas
BLUE SPOT	bruise
WRONG HAPPEN	accidentally or by chance, fate
MONEY BEHIND	money kept in reserve
WEDDING CELEBRATE	anniversary
TIME SAME	at the same time
THINK ALIKE	to agree
GOOD ENOUGH	just barely adequate
SURE WORK	seriously
WILL SORRY	regret
THRILL INFORM[+]	news or entertainment
FOOD BUY[+]	grocery shopping
THINK TOUCH[+]	keep thinking about
FLOWER GROW[+]	a plant
SOIL MEASURE[+]	surveying
BODY BURN[+]	cremation

Lexical Independence of Individual Signs in a Compound

The English compound *bluebird* is clearly composed of two independent lexical roots, *blue* and *bird*. By contrast, *bluish* is not a compound by this criterion because the suffix *-ish* does not have lexical root status in English. According to the intuitions of our deaf researchers, the two-sign units in the corpus were composed of two (or more) independent root signs.

In English, in the vast majority of compounds the basic phonological shape—the sound—of each component element remains essentially the same. However, in some English words generally referred to as compounds certain of the component sounds show a marked change—for example, *chairman*, in which the vowel of *man* shows a phonemic change from the original. In cases like *breakfast* (which was a compound historically), the vowel of each component has undergone

change. But the archetypal case of a compound in English is like *blue-bird*: the vowels and consonants retain their original pronunciation under compounding but the compound shows a characteristic stress pattern different from that of a phrase.

The ASL two-sign units in the corpus characteristically appeared to us to exhibit considerable difference in form from the two signs as separate lexical items. There was some question about the identification of specific signs as the source components of a particular composite.⁴ Our criterion was the agreement of our deaf researchers' independent glossings of components.⁵

The Compound as a Lexical Unit

There are several criteria for determining whether composites are functioning as single lexical units in ASL rather than as two signs in phrasal relation: (1) unlike a sign in a phrase, a member of a compound cannot serve as a constituent in a syntactic construction; (2) like a single sign, a compound is an indivisible unit and cannot be interrupted by other signs; and (3) like a single sign, a compound (as a unit) can undergo certain grammatical operations that cannot extend over phrases.

Grammatical operations limited to signs in a phrase. In the English phrase *a dark room*, the adjective *dark* can be modified to mean 'sort of dark' by adding an inflectional suffix *-ish*, as in *a darkish room*. But one could not add the inflection to the first component of the corresponding compound *a darkroom*. ASL does not have segmental affixation, but there are grammatical operations which take a different form (to be discussed in chapters 11 and 12). Signs can be modulated in regular ways to change their form and meaning. For example, the sign BLUE can be changed to mean 'dark blue' by a change in the quality of the movement. BLUE has a repeated twisting movement; the modulated form meaning 'dark blue' has a single tense rapid movement (see figure 9.7).

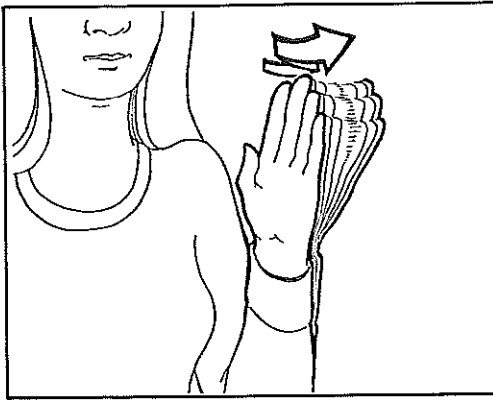
When BLUE is used as a syntactic constituent (say, as a modifier in a noun phrase), it can be modulated. In sentence (1) BLUE is a modifier in the noun phrase BLUE SPOT; thus the sign BLUE can be modulated, as in (2):

- (1) TED HAVE BLUE SPOT.
Ted has a blue spot.
- (2) TED HAVE BLUE[M: 'dark'] SPOT.
Ted has a dark blue spot.

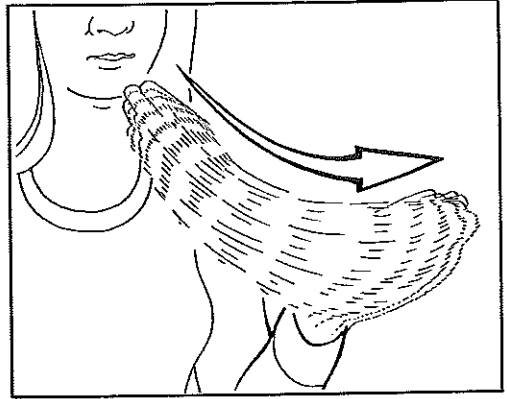
In sentence (3) BLUE SPOT is a composite with a different meaning:

- (3) TED HAVE BLUE SPOT.
Ted has a bruise.

Figure 9.7 The ASL sign BLUE and the modulated form meaning 'dark blue.'



BLUE



BLUE[M: 'dark']

If the sign BLUE in the composite is an element of a compound, the modulatory process should be blocked; it should operate on the sign only when it is functioning syntactically as an independent lexical item. In fact, for the meaning *Ted has a dark blue bruise* one cannot sign (4), which is ungrammatical in ASL (as indicated by the asterisk).

(4) *TED HAVE BLUE[M: 'dark'] SPOT.

Rather, the modulated form of BLUE and the compound BLUE SPOT could co-occur:

(5) TED HAVE BLUE SPOT, BLUE[M: 'dark'].

Thus the modulatory process cannot single out one of the components of a compound as if the sign were an independent constituent of a phrase, an indication that the components are grammatically fused.⁶

The integrity of the compound as a lexical unit. If two signs form a compound functioning as a single lexical unit, the two parts may not be separated by inserting additional signs, just as a spoken word cannot be interrupted by other forms. In the phrase BLUE SPOT, one can insert other descriptive signs such as LARGE or CLEAR, as in BLUE LARGE SPOT ('a large blue spot').⁷ But the sign LARGE cannot be inserted between the two parts of the compound, BLUE SPOT. Such an insertion would dissolve the compounding bond. Thus in

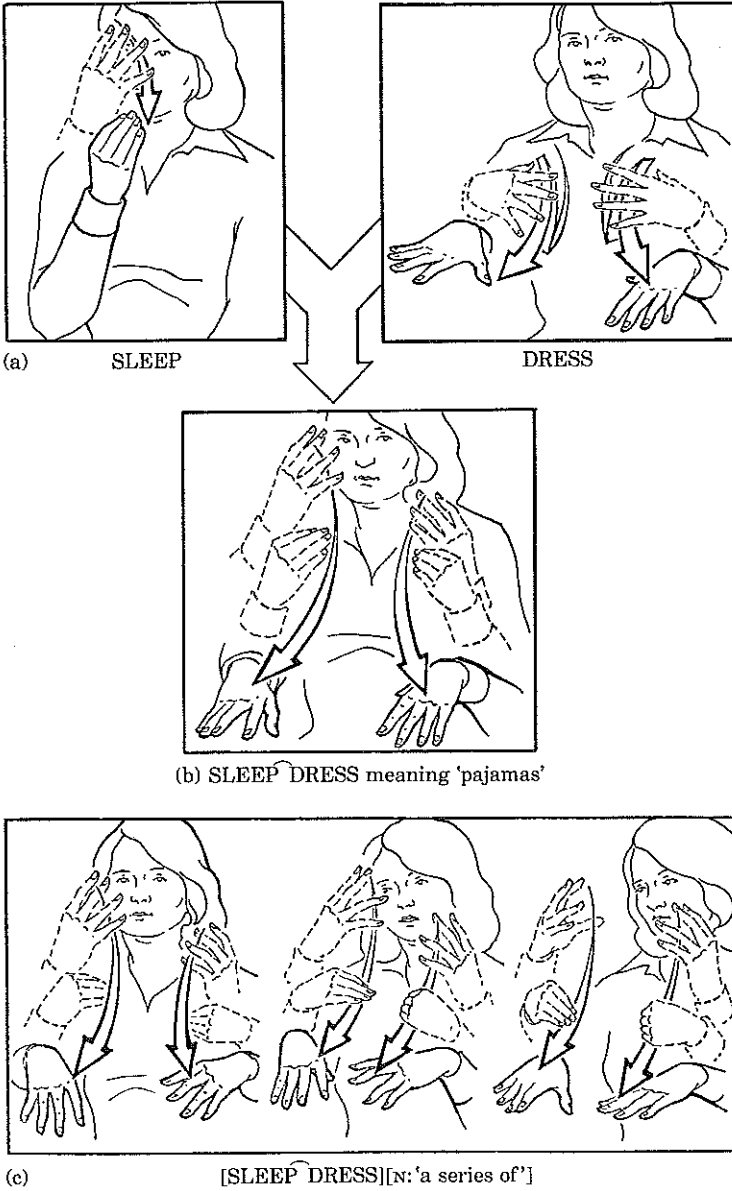
(6) TED HAVE BLUE LARGE SPOT

BLUE and SPOT cannot be interpreted as forming a compound and thus cannot mean that Ted has a large bruise. For this meaning the modifier could occur only before or (preferably) after BLUE SPOT, again an indication of its status as an indivisible unit:

(7) TED HAVE LARGE BLUE SPOT.

(8) TED HAVE BLUE SPOT, LARGE.

Figure 9.8 A compound sign SLEEP DRESS (b) and its form under an inflectional process (c).



Operations limited to compounds and single signs. Some compounds can undergo grammatical operations that single signs can undergo but that phrases cannot; that is, the operation applies to the entire compound, both in form and in scope. We have studied some grammatical operations involving reduplication, which apply to single lexical signs, here referred to by the meanings they add: (a) 'a series of,' (b) 'the same old thing again and again,' (c) 'regularly.'

Such grammatical operations can apply to single signs but not to phrases; they can also apply over both components of certain compounds—that is, over the compound as an integrated unit. The signs SLEEP and DRESS form a compound meaning 'pajamas' or 'nightgown,' (see figure 9.8b). Under the grammatical operation adding the meaning 'a series of,' the compound as a whole is reduplicated, each iteration displaced laterally (figure 9.8c):

(1) SISTER PROUD SHOW[x: 'me'] [SLEEP DRESS][N: 'a series of'].

My sister was proud to show me her collection of pajamas.

The grammatical inflection that adds the meaning of 'the same old thing again and again' operates on compound signs as lexical units as well as on single signs. It is a serial plural form using slow reduplication (with added facial expression):

(2) EVERYDAY[+] MOTHER FORCE[x: 'me'] EAT [RED SECRET]
[M: 'the same old thing again and again'].

My mother makes me eat the same old thing, strawberries, every-day.

A fast repetition operating on simple as well as compound verbs in ASL adds the meaning of 'habitually' or 'regularly':

(3) SUMMER[+], (ME) [SLEEP SUNRISE][M: 'regularly'].

During summers, I regularly oversleep.

In each case, the grammatical operation applies to the compound as a whole just as it does to single signs, but not to both parts of a phrase. In sum, that compound signs—but not entire two-sign phrases—can undergo the same grammatical processes as individual signs is an unambiguous indicator that the parts of a compound are indeed bound together, not only semantically but also structurally, as a single lexical unit.

Specialized Meaning of Compounds

Compounds come into existence in the first place as a recombining of single words or signs already in the lexicon. Sometimes the combination of two or more words or signs reflects a rather direct composition of the meanings of its parts; frequently, however, the compound has a specialized meaning that may not be directly predictable (therefore, such lexicalized compounds should be included in the dictionary of any

language, and a comprehensive dictionary of ASL would include a very large number).

We have shown that in the compound BLUE SPOT, meaning 'bruise,' the sign BLUE is not a simple modifier and cannot be modulated as it could be in the phrase BLUE SPOT. In fact, it is appropriate to sign BLUE SPOT GREEN, VAGUE YELLOW[+] of a bruise that is not blue, meaning 'that bruise is green and yellowish.' It is not a contradiction to sign MY BED SOFT HARD[+]; the sentence does not mean 'my soft bed is hard' but rather 'my pillow is hard.' Similarly, the compound consisting of WEDDING followed by CELEBRATE does not mean the celebration of a wedding but means 'anniversary.' The compound consisting of TOMORROW followed by MORNING has a general meaning of 'the next morning,' or even 'the next day'; in signing a narrative about an event that took place three years ago the appropriate sign for 'the next day' in the story would be the compound TOMORROW MORNING. It is in this sense that such compounds have independent lexicalized meaning.

The shift in meanings of signs in compounds shows that signs are not, as might be thought, inextricably tied to their original designations. Pressure of grammatical processes, including compounding, can loosen connections between sign form and sign referent. The iconic value of a sign yields to the overriding force of the grammar and is readily submerged.

There is, then, both morphological and syntactic evidence that many composites in ASL qualify as compounds. But when an ASL signer uses the sequence of signs BLUE SPOT, does anything in their form signal whether his meaning is the phrase 'a blue spot' or the compound 'a bruise'?

Clues to Recognition of Compounds

English compound nouns are distinguished from phrases consisting of the same items by a difference in stress: the compound *lady killer* and the phrase *a lady killer* are stressed differently; the compound *blúe print* is similarly distinguished from *a blue print*. Characteristically in English there is heavier stress on the first element of a nominal compound and on the final element of a phrase. (Description of English compounds and discussion of their definitions are given in Lees 1960; Jespersen 1961; Gleitman and Gleitman 1970; Marchand 1969; Zimmer 1971.)

Researchers looking for evidence for compounding in sign languages have generally approached the question by looking for such stress differences in sign sequences. For example, Schlesinger and Presser (1970), on the question of compounds in Israeli Sign Language, con-

cluded that the "criterion [of intonation] cannot be applied in sign language where there is, of course, no intonation in the sense there is in spoken language, and we do not know of other paralinguistic features in terms of which compounds might be defined" (p. 3).

Friedman (1974) similarly concluded from her studies of ASL that "in terms of stress manifestation there is no evidence to support a differentiation" between a compound and a phrase (p. 73).⁸

A question that clearly follows from the syntactic evidence that many composites do qualify as compounds, then, is whether ASL provides clues to their recognition and distinction from phrases.

Rhythmic Properties

To investigate the possible differences in form between two signs used as a phrase or clause and the same two signs used as a compound, deaf researchers invented sentence frames which permitted the same signs to occur, as in the sequences with BLUE and SPOT or SLEEP and DRESS. They videotaped these sentence pairs, permitting us to study in detail (under slow motion) the distinguishing clues that differentiate compounds from phrases in the signing stream. For example, the signs GOOD and ENOUGH can occur in a phrase or as a two-sign compound unit, as illustrated in the following:

- (1) (YOU) CLEAN HOUSE GOOD ENOUGH.

You cleaned the house adequately.

- (2) (YOU) CLEAN HOUSE GOOD ENOUGH.

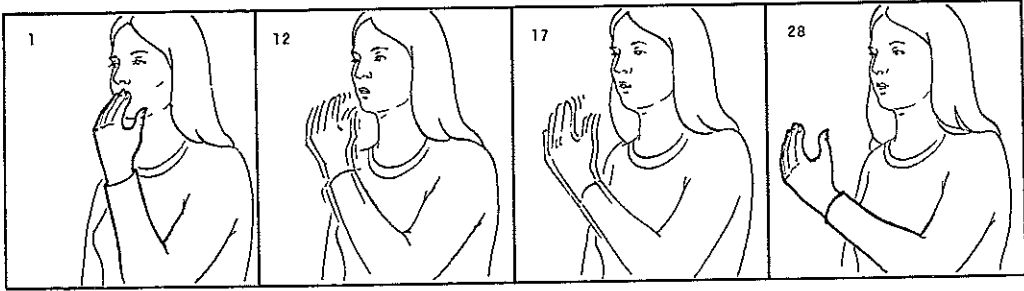
You cleaned the house just barely adequately.

As a compound, GOOD ENOUGH does not mean 'well enough' but 'hardly at all' or, as one deaf person put it, 'with just a lick and a promise.'

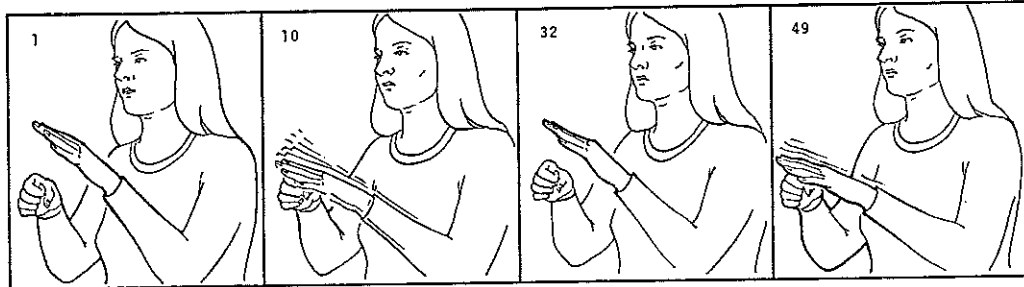
On first viewing these sentence pairs, our overall impression was that there was a difference in rhythm between the two constructions: the two signs in the compound unit seemed closer together somehow as compared with the same two signs in a phrase. (Figure 9.9 shows the separate signs GOOD and ENOUGH and the compound unit GOOD ENOUGH: the initial position of each sign is represented in the first frame of a set, the movement intrinsic to the sign in the second and third frames, and the final position of the sign in the fourth frame.)

Subsequent careful study of several videotaped renditions of the phrase GOOD ENOUGH and the compound GOOD ENOUGH revealed detailed differences in the *form* of the component signs which may have contributed to the overall general impression of rhythmic compression in the compound. In the compound, as contrasted with the two signs in a phrase, we found that (1) the initial hold of the sign GOOD was reduced to a brief contact; (2) the repetition of the sign

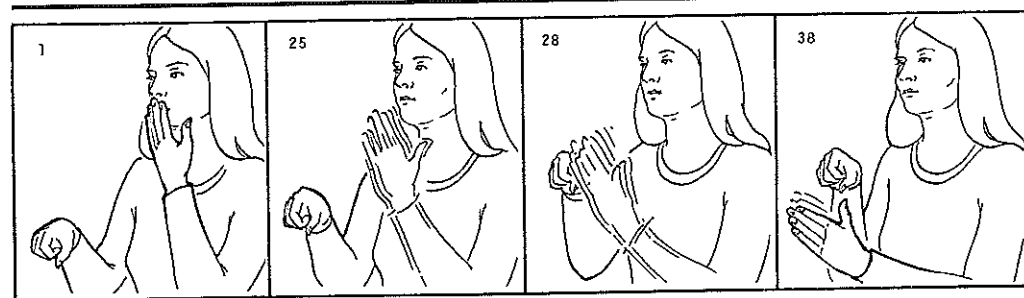
Figure 9.9 Temporal properties of two separate signs and the same signs as a compound. (Numbers represent field numbers from videotape.)



(a) The sign GOOD



(b) The sign ENOUGH



(c) The compound GOOD ENOUGH meaning 'just barely adequate'

ENOUGH was lost; (3) the base hand of the final sign ENOUGH was already in position and configuration at the start of the initial sign GOOD; and (4) there was a reduction in the transition between the two signs as well as in their movements. In the phrase there was a clear representation of the full movements of both signs and the transitional movement between them. In the compound the hand moved from the onset of the reduced GOOD in a smooth fluid motion directly through to the offset of the reduced ENOUGH. (While the change in form is not so great that a deaf person would fail to recognize the two source signs GOOD and ENOUGH, it clearly distinguishes the compound from the phrase.) The temporal duration of the signs GOOD and ENOUGH as

separate simplex signs and as a compound was measured by counting the number of fields the signs occupied in the videotapes (see figure 9.9).⁹ The compound of the two signs took roughly half as long as the sum of the two simplex signs:

GOOD	ENOUGH	GOOD ENOUGH
28 fields	49 fields	38 fields

When 70 commonly agreed upon ASL compounds were similarly timed (from videotaped renditions by two deaf signers), these compounds too were found to be comparable in duration to each of the simplex signs made separately. For signer 1, the mean duration of simplex signs was 39 fields, the mean duration of compound signs 37 fields; for signer 2, the mean duration of simplex signs was 50 fields, the mean duration of compound signs 44 fields. Two signers with different rates of articulation both compressed the compounds so that they were temporally comparable to simplex signs.

Our measurement of the 70 compound signs showed that this temporal compression is not shared equally by the two signs that constitute the compound: the first sign is drastically reduced compared with the second. The mean durations of the first signs were 8 and 10 fields (for signer 1 and 2 respectively); the mean durations of second signs were 20 and 24 fields. (Transitions between the two signs in the compounds were also remarkably brief, with mean durations of 9 and 10 fields.)

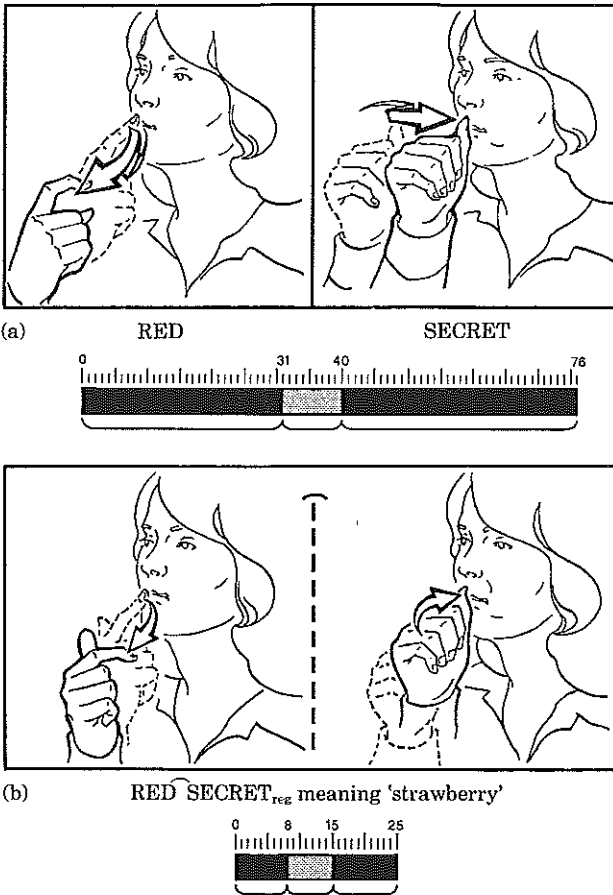
Is it the position of a sign in a compound that accounts for its shortening, or are initial signs inherently simpler in form? We investigated this by timing 15 compound pairs where the same sign occurred as a *first* component in some compounds and as a *second* component in others. Some examples:

TALK NAME	(to mention)
NAME SHINY	(fame)
BED SOFT	(pillow)
SOFT FOOD	(bland diet)
BLACK LIGHT	(black light)
LIGHT BLINK	(alarm clock)

We found that a sign in compound-first position is radically compressed compared with its duration in second position. (First position mean durations: 9 fields; second position mean durations: 22 fields.) Again the position of the sign in a compound determines the degree of the sign's compression.

For most of the compounds we studied, the second sign was the se-

Figure 9.10 Temporal properties of two signs in a phrasal relation and the same two signs in a compound. (Time lines representing videotape fields indicate durations; transition between signs is in gray.)



mantic head of the compound; for instance, $\widehat{\text{JESUS SCHOOL}}$ ('Bible school') is a type of school. But some ASL compounds have the semantic head in first position. To investigate whether such semantic prominence affects the rhythmic properties of a compound, we timed 11 compounds where the semantic head occupies the first position, as in $\widehat{\text{MONEY BEHIND}}$ ('money kept in reserve for an emergency') and $\widehat{\text{THIEF HOLD-UP}}$ ('an armed robber'). The semantic heads in first position still were compressed to an average of only 9 fields, while the second-position sign in these compounds occupied an average of 24 fields. Once more, position rather than some other property determined which sign would be most compressed.

Finally, to establish whether the temporal phenomena characteristic of compounds in fact distinguish them from phrases, as was our original impression with pairs like GOOD ENOUGH and GOOD ENOUGH, we timed 17 compound-and-phrase pairs. Each pair was made up of the same two signs, for example, BLACK NAME ('a name painted black') and BLACK NAME ('bad reputation') or RED SECRET and RED SECRET (a regional sign for 'strawberry'; see figure 9.10 for time line). The mean duration of the phrases was nearly twice the mean duration of the compounds (both measures include transition times, which were longer in the phrase than in the compounds):

	Mean duration (in fields)	
	Signer 1	Signer 2
Compounds	39	42
Phrases	69	76

Thus the duration of a two-sign compound is on the average far briefer than that of a phrase consisting of the same two signs and is, rather, closer to that of a single sign. Temporal compression in a compound has its most radical effect on the first element, even when that element is the semantic head of the compound.

We can suggest the special rhythmic properties of compounds by way of musical notation. Note that the separate signs (MONEY and BEHIND) have equal temporal duration, although MONEY has two rhythmic beats (representing repetition of movement) and BEHIND has one (a single movement). In the compound MONEY BEHIND ('emergency money'), the duration of each sign is reduced so that the entire compound is equivalent to the duration of one of the separate signs (repetition is eliminated and movement is shortened). In the compound the first sign is notated as an upbeat; that is, MONEY is

The diagram illustrates the rhythmic structure of separate signs versus compounds using musical notation. Each row shows a pair of separate signs and a corresponding compound sign.

- Row 1:**
 - Separate signs: MONEY (two eighth notes) and BEHIND (one eighth note).
 - Compound sign: MONEY BEHIND ('emergency money'), where the first sign is an upbeat and the second is a single eighth note.
- Row 2:**
 - Separate signs: NAME (two eighth notes) and SHINY (one eighth note).
 - Compound sign: NAME SHINY ('fame'), where the first sign is an upbeat and the second is a single eighth note.
- Row 3:**
 - Separate signs: EAT (two eighth notes) and NOON (one eighth note).
 - Compound sign: EAT NOON ('lunch'), where the first sign is an upbeat and the second is a single eighth note.

rhythmically like a pickup beat to the more stressed beat after the bar line (BEHIND).

Compounds in ASL may be identified and distinguished from phrases, then, by a visual-manual analogue to intonational patterns: temporal rhythm.

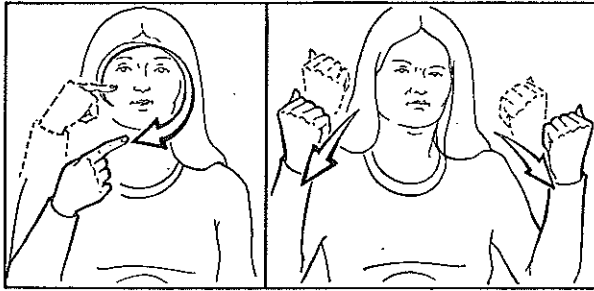
Nature of Reduction in Lexicalized Compounds

When signs are compounded, the duration of the compound as a whole is reduced. In a sense, semantic lexicalization is accompanied by formal lexicalization: just as the two signs have a single new meaning, so they are compressed in time toward a single form, though (in the compounds studied here) they retain identifying characteristics of the component signs. What changes in the production of the signs contribute to the temporal compression?

Changes in the movement of the first sign. Invariably, movement components of the first sign in a compound are reduced and weakened. The first sign loses its stress as well as its repetition and becomes in effect an upbeat to the second sign. Single movement, double contact, alternating movement, repeated movement (bounce, twisting)—all shorten in time, reduce in length, weaken in stress. One-handed signs, for example, tend to reduce to a single brief contact or stop—a duration of a few milliseconds—as if representing just the onset of the sign.¹⁰ Signs with circular movement also have, in their most reduced form, a briefly indicated stop, as in FACE STRONG meaning 'resemble' (figure 9.11).¹¹ The sign FACE has a large circular motion in citation form; as the first element of a compound, the sign may lose the circular motion and become a brief point in space—again suggesting only the onset of the sign.

Changes in the movement of the second sign. Signs in second position (if they are uninflected forms) also exhibit a loss of repetition of movement, as in SURE WORK ('serious'), GOOD ENOUGH ('just barely adequate'), FACE NEW ('stranger'), YELLOW BOOK ('Yellow Pages'). But there is no weakening of movement; the second-position sign retains normal stress. In some compounds the second sign actually takes on added stress (characterized by tension of the muscles and rapid movement) compared with the same two signs in a phrasal or clausal relation. Compounds in which the second element characteristically has additional stress include BLUE SPOT ('bruise'), BLACK NAME ('bad reputation'), SICK SPREAD ('epidemic'), and FEEL SPIRIT ('high spirits').

If the source sign of a sign in second position has already undergone some inflectional process before compounding, the inflectional pattern does not reduce. (Note in table 9.1 the compounds whose source signs

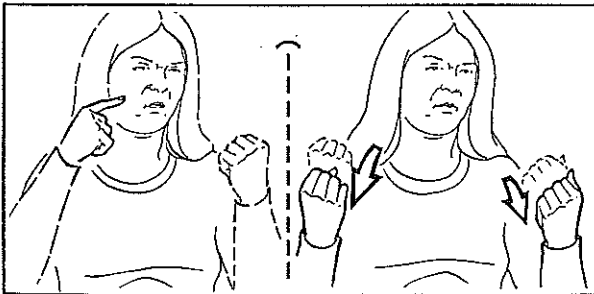


(a)

FACE

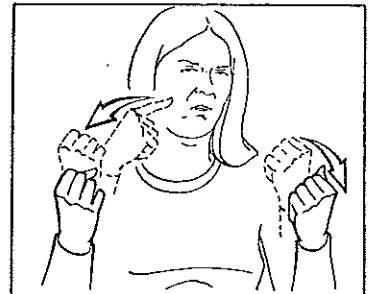
STRONG

Figure 9.11 Reduction of the first sign in a compound. The two separate signs (a); compound shown in two drawings (b) and a single drawing (c).



(b)

FACE STRONG meaning 'resemble'



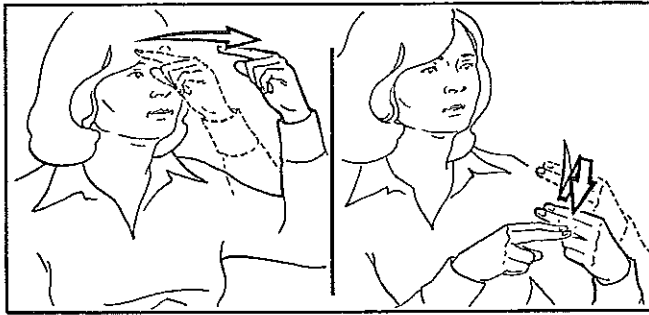
(c)

FACE STRONG

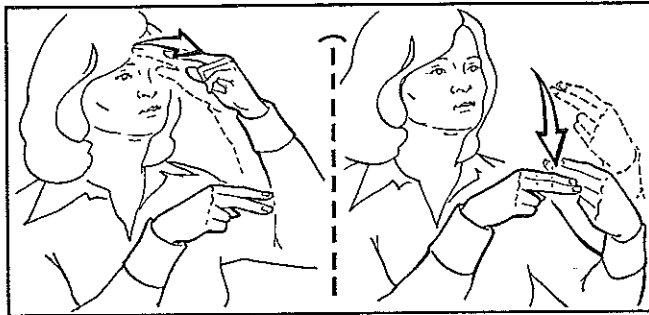
are marked with [+].) Some compounds are formed from signs that have undergone inflectional change and some from derived signs. Thus the sign GROW has a single opening movement as a verb in the sentence FLOWER GROW ('the flower is growing'), but in the compound FLOWER GROW [+], meaning 'a plant,' GROW[D: nominal] has the smaller repeated form characteristic of nouns; under compounding, the derivational pattern is preserved.

Unification of manual arrangement. When a one-handed sign is made in isolation, the hand not in use is in a rest position or at the signer's side. In citation-form signing of a phrase such as BLACK NAME (one hand, then two hands), the free hand does not come into position until the second sign. In signed discourse the base hand as a location frequently lags behind the active hand.¹² In lexicalized compounds, however, there is anticipation rather than delay. The base hand of a compound-final sign anticipates, occurring in compound-initial position in its proper PA and with its correct HC, as if both parts of the compound required two hands. The sign BLACK is a one-handed sign; the sign NAME has one hand acting on the other as a base. In citation signing of the phrase BLACK NAME, there is no evidence of

Figure 9.12 Unification of hand arrangement in a compound.



(a) BLACK NAME



(b) BLACK NAME meaning 'bad reputation'

NAME's nondominant hand during the signing of BLACK (figure 9.12a). By contrast, in citation signing of the compound BLACK NAME, the base hand of NAME appears throughout the two signs (see figure 9.12b), suggesting again that even in form the two signs constitute a single unit.

Smoothing of transition between signs. Still another change that occurs in compounding, is illustrated in figures 9.13a and 9.13b: the transition between BLACK and NAME is reduced. Reduction in transitional movement between two signs in a compound takes the form of compressing movements (temporally and spatially) and where possible making them more fluid.¹³ Transition reduction may be accomplished spatially, by making the two signs of a compound closer together in signing space than they would be in a phrase, as in JESUS BOOK ('Bible') and THINK TOUCH[+] ('keep thinking about'). The end position of one sign may be used as the starting position of the next, as in THRILL INFORM[+] ('news,' or 'entertainment') where the hands in the sign THRILL, instead of separating widely, move up the body only to the starting position for INFORM[+] (figure 9.14). And in the composite expression with which we began this chapter, NUDE ZOOM-

Figure 9.13 Reduction of transitions between signs in a compound. (For explanation of conventions used in drawings, see Appendix B.)

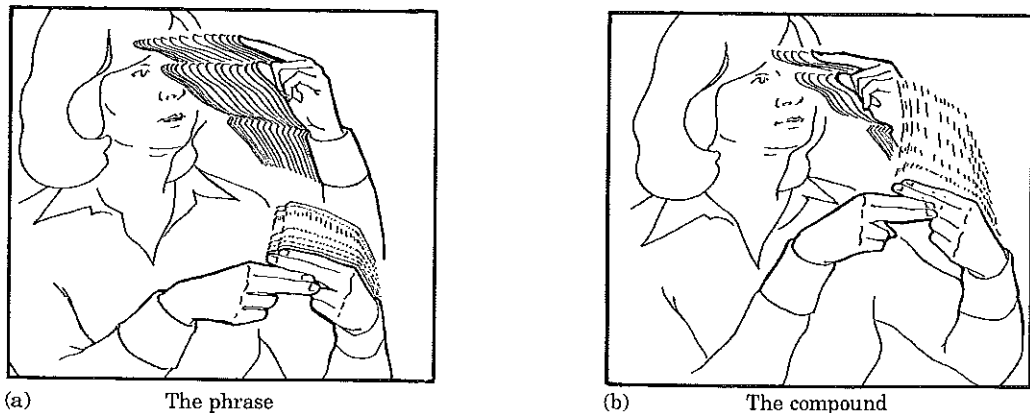
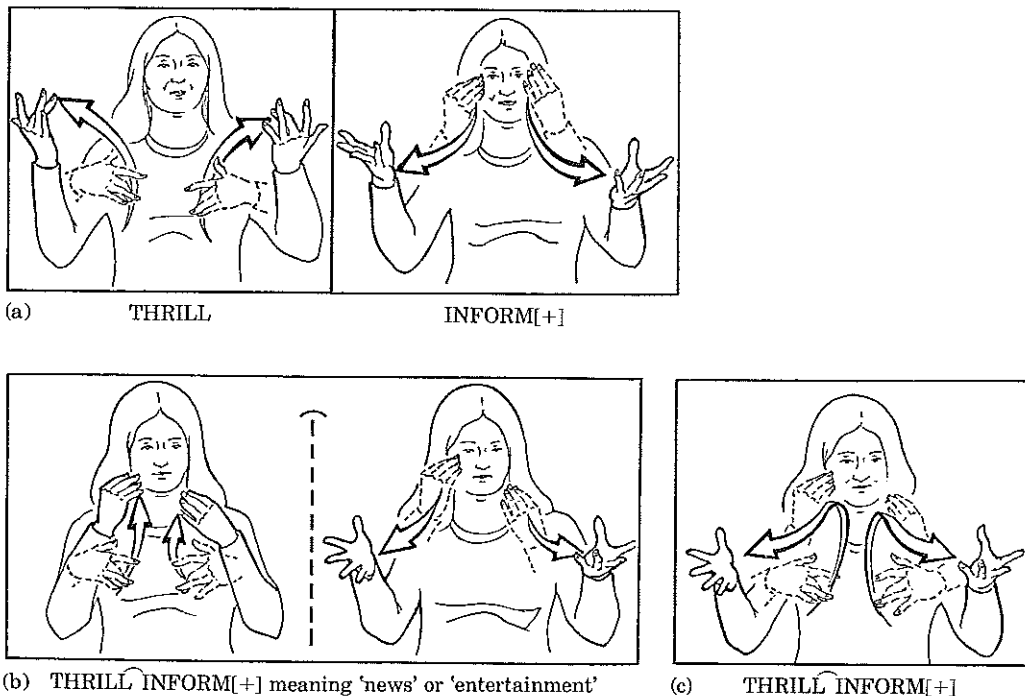


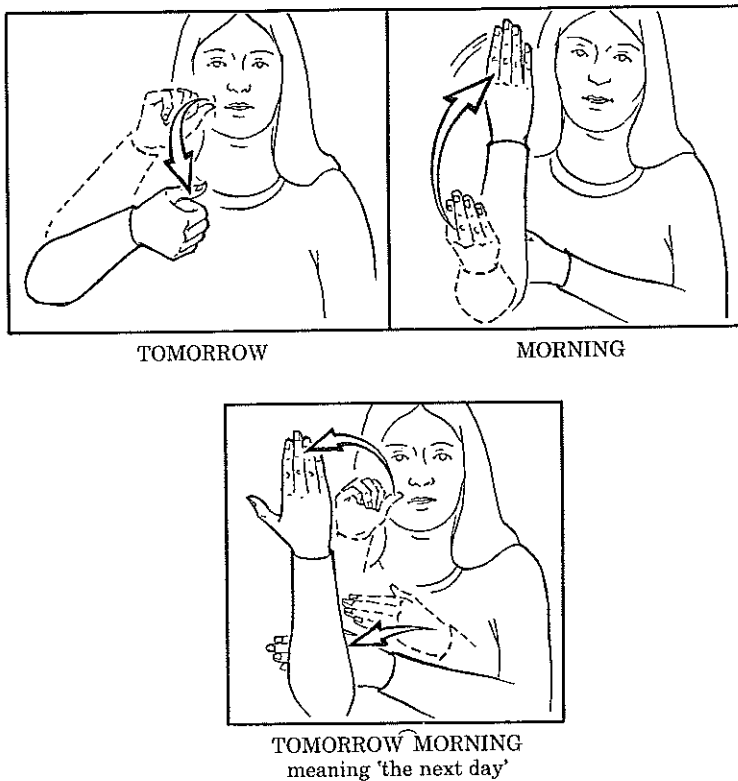
Figure 9.14 Reduction of transitions between signs. The two separate signs (a); compound shown in two drawings (b) and a single drawing (c).



OFF ('streaker'), the active hand moves along one continuous horizontal path, smoothly changing from one HC to the other as it does so (see figure 9.1).

There are more radical ways in which the transitional movement between two signs is reduced in lexicalized compounding. The compression may integrate movements of the two signs into one smooth flow: the compound begins with the onset of sign 1 and proceeds to the terminus of sign 2 with a smooth movement between, incorporating aspects of both signs' movements, as we have seen in GOOD ENOUGH (figure 9.9). Similarly, in the compound TOMORROW MORNING, meaning 'the next day,' the hand begins in the onset position of TOMORROW and moves in a single opening-while-turning motion directly to the offset of MORNING, with the base hand for MORNING already in place at the start of the compound (figure 9.15). The two

Figure 9.15 Reduction of movement to a unitary smooth flow. (In the compound the onset of the first sign leads directly to the offset of the second.)



source signs are still identifiable despite the temporal compression of the final lexicalized compound.

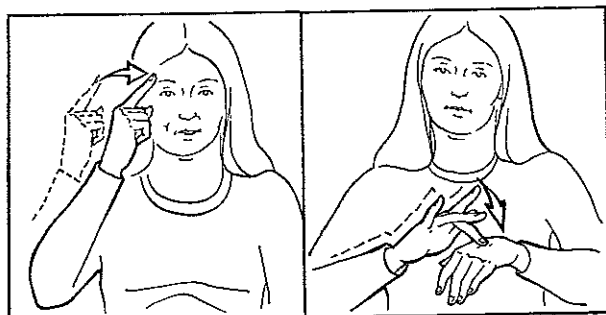
Is there evidence of structural change in compounding in ASL? Or is time pressure alone responsible for the changes that the components of signs undergo? If the latter were the case, the full form of the signs should reappear when that temporal pressure is lifted. There is evidence, however, that the peculiar behavior of these lexicalized compounds is not merely the result of the rapid rate of their articulation. We have relaxed the temporal constraints in two different ways: first, we asked deaf signers to make the compound signs slowly and carefully; second, we set up a condition that would promote the sign-language equivalent of shouting, by placing signers about 200 feet apart and asking them to communicate with each other a list of phrases and associated compounds. (We had previously noted that under conditions of signing across large distances, signers modified the signs by making them larger and slower.) Under both of these conditions the effects of reduction remain. Thus lexicalized compounding apparently results in a systematic formational change leading to simplification in form.

Merging: The Effect of the Gestural Mode?

The temporal reduction characteristic of compounds has ramifications for the way components change shape over time. The historical processes by which compound signs merge into single-sign units were discussed in chapter 3. The changes we have described in lexicalized two-part compounds can be viewed as initial stages in a process that may eventually lead to a merged simplex form as the parts of a compound finally lose their individual identity.¹⁴

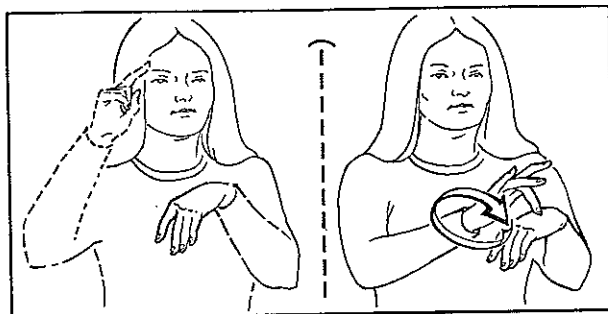
Precursors to the final merging process can be observed in the stylistic variations that occur in informal signing of certain compounds, in which further reductions of form take place. In the citation form of the compound THINK TOUCH[+] (meaning 'keep thinking about') each member has its own distinct PA and HC (see figures 9.16b,c). Three stylistic variants of this form, which are used interchangeably, are also represented in figure 9.16: in 9.16d the target location of the first sign is lowered, thus decreasing distance between the signs; in 9.16e the HC of the second sign replaces that of the first, resulting in a single hand-shape form; in 9.16f the identity of the first sign is lost altogether: the stylistic variant starts with a holding position above the base hand—perhaps a trace of the lost first sign. This synchronic variation reflects the kinds of historical processes that operate on compound signs, lead-

Figure 9.16 From separate signs (a), to compound (b,c), to a unitary sign form in synchronic variation (d,e,f), occurring in informal signing.

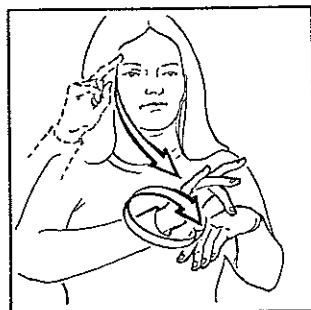


(a) THINK

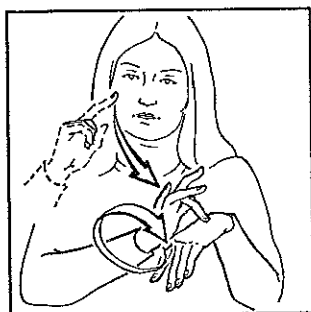
TOUCH



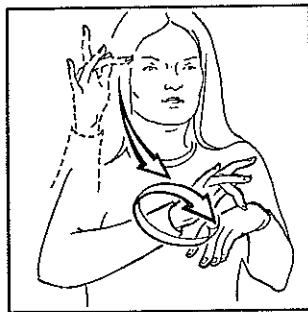
(b) THINK TOUCH[+] meaning 'keep thinking about'



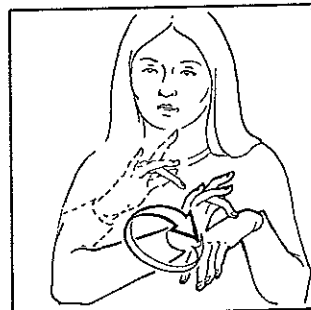
(c) THINK TOUCH[+]



(d) THINK TOUCH[+]var



(e) THINK TOUCH[+]var

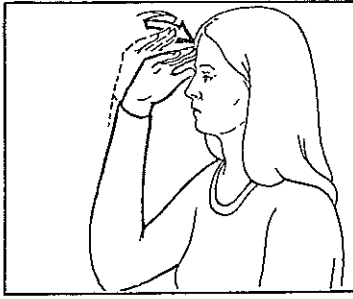


(f) THINK TOUCH[+]var

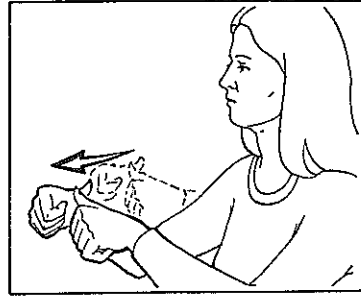
ing toward formational compression of the two parts into a single merged form.¹⁵

The ASL simplex sign REMEMBER was historically a composite of two signs: KNOW and STAY (figure 9.17a). Even today, in formal or oratorical signing the sign may take its original two-part form (figure 9.17b). But the citation form of the contemporary sign REMEMBER (figure 9.17c) has undergone assimilation (the HC of the second sign replacing that of the first) and is now a two-place sign. In a stylistic vari-

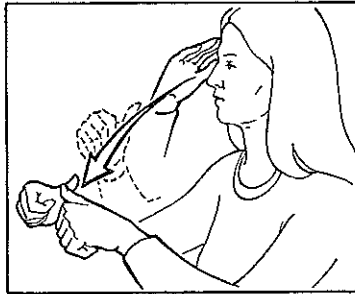
Figure 9.17 From separate signs to unitary sign forms in historical progression. As separate signs (a), as a formal compound (b), as a contemporary sign (c), and as an informal stylistic variant (d).



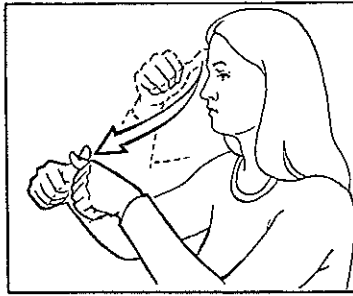
(a) KNOW



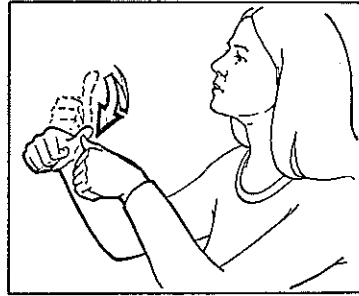
STAY



(b) KNOW STAY
meaning 'remember'



(c) REMEMBER



(d) REMEMBER_{var}

ant of REMEMBER (figure 9.17d), a shortened form used colloquially, all elements of the first sign KNOW have been lost, including its PA, and the mov of the remaining sign has been temporally lengthened by repetition. As the two parts of a compound merge into a gesture that has the properties of a single sign, some sort of lengthening of movement of the new simplex sign naturally occurs (as witness figure 9.17d). Frishberg (1976) has likened this process to compensatory lengthening in spoken languages.

Many of the basic signs of ASL can be described as appropriate to their meanings—they are adequate sign forms. But compounding as a grammatical process operates on the form of signs in ways that suppress this apparent natural connection between a sign form and its meaning. The sign THINK is made by tapping the forehead, the presumed source of thought, but in the compound THINK TOUCH[+] meaning 'obsessed with,' the sign typically loses its contact with the forehead.

Compounding, by its nature, promotes another kind of abstraction. Lexical compounding is a way of creating new names from existing roots, combining them into a special meaning that then takes on its own natural extensions. In this way the component signs may no longer retain the meanings they have as single signs. The compound BLUE SPOT may have been coined for a bluish bruise, but it has come to mean a bruise of any color; the sign BLUE as part of the compound loses explicit color reference. The compound TIME BLINK was coined for alarm clocks used by deaf people, which emit flashes of light, but it has come to be used for all alarm clocks; in this way the sign BLINK ('flashing light') as part of the compound loses explicit reference to light. Thus compounding operates as a grammatical process submerging the iconicity of signs and prying them loose from their original meanings.

In this chapter we have shown that ASL provides for the creation of compounds and provides clues in the sign stream for the differentiation of compounds from phrases. That these special structural units have not previously been recognized by analysts is not surprising. It is at first difficult to see the small differences in rhythm in the sign stream; nonetheless, the differences are clearly marked in the contrast between phrase and compound. These rhythmic differences are, in the final analysis, analogous to intonational distinctions in spoken languages. In English, components of lexicalized compounds generally tend to retain their phonological shape over relatively long periods of time; in ASL, structural changes that deform the shapes of the component signs typically lead toward merging.

The vocabulary of ASL is far richer than has been claimed, expanded by an active, living process for the creation of new names from existing signs.¹⁶ Recent ad hoc inventions include PREVENT CAVITY ('fluoride'), DIRTY AIR ('pollution'), MACHINE COPY ('Xerox'), and, of course, NUDE ZOOM-OFF ('streaker'). This study suggests (and subsequent chapters demonstrate) that contemporary ASL has grammatical processes of its own, independent from those of the surrounding language community.